

MONTROSE DISTRICT
ENVIRONMENTAL ASSESSMENT
COVER SHEET

UNCOMPAHGRE BASIN RESOURCE MANAGEMENT PLAN AMENDMENT

EA No. CO-030-U-92-20

Legal Description:

Uncompahgre Basin Planning Area

List of Preparers:

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Bureau of Land Management
Uncompahgre Basin Resource Area
June 30, 1992

Decision Record

UNCOMPAHGRE BASIN RESOURCE MANAGEMENT PLAN AMENDMENT

EA # CO-030-U-92-20

Decision:

Based upon the findings of this assessment, my decision is to amend the Uncompahgre Basin Resource Management Plan and consider fire as a management tool for the entire planning area, subject to site specific environmental analysis and approved burn plans.

Rationale:

Amending the plan will allow greater flexibility in managing plant communities and solving problems identified by wildlife, watershed, range, and recreation specialists. It will also allow BLM greater ability to deal with changing priorities and initiatives of other organizations with which we share common goals, including the Colorado Division of Wildlife, U.S. Forest Service, and the Fish and Wildlife Service.

Monitoring:

Monitoring studies will be established as identified in the site-specific Environmental Assessment prepared for each burn.

Finding No Significant Impact:

Based on the analysis in the attached environmental analysis, amendment of the Resource Management Plan will not result in significant impacts to the environment and will not have highly controversial effects; therefore an Environmental Impact Statement is not required.

Received by

Ron Huntley
Ron Huntley, Environmental Coordinator

Sept 17, 1992
Date

Recommended by

Alan J. Belt
Alan J. Belt, Area Manager

9/12/92
Date

Concurrence by

Alan L. Kesterke 9/22/92
Alan L. Kesterke, District Manager Date

Approved by

Bob Moore
Robert Moore, State Director

10/5/92
Date

UNCOMPAHGRE BASIN RESOURCE MANAGEMENT PLAN AMENDMENT

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I. PURPOSE AND NEED:

Habitat quantity and quality are of critical importance to the maintenance and well-being of Colorado's big game herds. The quantity of habitat will continue to decline as the many human pressures seriously alter or destroy our valuable ecosystems. Thus, a reduction in deer and elk numbers will occur unless we can compensate for losses in habitat quantity with increased habitat quality.

A priority strategy in the Colorado Division of Wildlife's Strategic Plan (Today's Strategy ... Tomorrow's Wildlife) states that the Division will "Increase carrying capacities of deer and elk habitats on public lands through controlled burning, chaining, fertilizing, timber management and similar methods." Wildlife and land managers are well aware of the need for maintaining viable big game populations to meet rising demands for big game hunting and other forms of wildlife-oriented recreation.

One of the primary factors which limits big game populations in Colorado is availability and condition of winter range. Winter ranges are continually being altered due to construction of dams, reservoirs, and highways; urban, industrial, agricultural, and recreational developments; and oil, gas, coal, and other mineral exploration. To offset and mitigate winter range diverted to other uses, efforts must be concentrated on protection and proper management of existing ranges and on their improvement, whenever possible, to achieve greater productivity.

The Gambel oakbrush (*Quercus gambelii*), pinon (*Pinus edulis*), juniper (*Juniperus* spp) and sagebrush (*Artemisia* spp) vegetation types offer important fall, winter, and spring habitat for elk (*Cervus elaphus nelsoni*) and mule deer (*Odocoileus hemionus*). Cattle often graze these vegetation types. Many stands, however, are very dense. Some appear to even physically exclude large herbivores. Some of these species are important winter forage species for elk and deer but as they become older, they grow beyond reach of elk and deer and become unavailable. Shading by taller plants, coupled with increased density, suppresses production of forbs and grasses in the understory. This results in decreased elk, deer, sheep and cattle forage. Tall dense stands need to be opened to make stands more accessible and increase forage production for grazing animals. Untreated patches need to be left to provide wildlife cover and soil stability.

The Uncompahgre Basin Resource Management Plan was started in July, 1983 when a Notice of Intent in the Federal Register began the formal planning process. The process included invitations to the public to participate in the process which included a series of public scoping meetings held in August, 1983 in Montrose, Delta, and Hotchkiss. An RMP newsletter was published in March, 1985 and sent to 700 addresses. A series of Open House meetings to review the RMP were held in January, 1986 in Montrose, Delta, and Paonia. The draft RMP/EIS was filed in July, 1987. Fifty-one (51) persons testified at the three public hearings held in September, 1987 and an additional 173 written comments were received. No protests were received and Record of Decision dated July, 1989 was issued.

The existing land use decisions in that document relating to prescribed burning state, "Fire will be managed as displayed on the map in Appendix D. This management is based on resource conditions, proximity of private development and risk of fire spread." Additionally, under each Management Unit decision, an allocation of acreage of public land is made detailing what type of fire suppression activity will take place in that unit. As a result, fire may be considered as a management tool on only one-fourth (1/4) of the Planning Area. The restriction of the use of fire on such a large area is an unnecessary one and hampers BLM's ability to respond to changing priorities and initiatives such as the Colorado Division of Wildlife's Habitat Partnership Program.

II. CONFORMANCE WITH LAND USE PLANS

The land use plan relating to the area covered by this Environmental Assessment is the Uncompahgre Basin Resource Management Plan.

III. PROPOSED ACTION AND ALTERNATIVES

A. Proposed Action

The proposed action would amend the Uncompahgre Basin Resource Management Plan to allow the use of fire through prescribed and planned ignitions on all 483,077 acres within the Uncompahgre Basin Planning Area. Currently, only about 1/4 of the Planning Area has fire identified as an acceptable and usable management tool. This amendment would change that status to allow fire to be considered as an option or alternative on all public land in the Planning Area. Prior to any ignitions, an Environmental Analysis, a burn plan, and a burning permit, each dealing on a site specific basis, would be prepared or obtained. This amendment would not eliminate or reduce any of the planning, public notification, or analysis work currently required when a planned ignition is proposed.

B. No Action

The No Action alternative would consist of not amending the Uncompahgre Basin Resource Management Plan to allow the use of prescribed burns on all 483,077 acres within the Planning Area. Other methods of vegetation manipulation would still be available for use as a management tool and prescribed fire could still be used on roughly 1/4 of the planning area which was allowed in the RMP. Other alternative methods would include rollerchopping, chaining, herbicides, and other mechanical methods of treatment. The impacts of these methods was described in the Vegetation Treatment on BLM Lands in the Thirteen Western States, 1991.

IV. AFFECTED ENVIRONMENT

The affected environment is generally described in the UBRA RMP, 1989, and the Integrated Analysis Roller Chopping and Controlled Burn EA.

Climate, Air Quality, Topography, and Soils

The planning area has a dry high valley/mountainous continental climate characterized by low humidity, sunny days, clear nights, low to moderate precipitation and evaporation, and wide-ranging diurnal temperature changes. The complex regional topography causes considerable variation in site-specific temperatures, precipitation, and surface winds. Seasonal conditions vary from frigid and blizzard-like to hot and dry.

Although monitoring data for most pollutants is not available, air quality in the planning area is typical of undeveloped regions in the western United States. Ambient pollutant levels are usually near or below measurable limits. Locations vulnerable to decreasing air quality due to extensive development include the immediate operations areas (surface mines, milling operations, power plants, etc.) and local population centers.

The planning area is predominantly a broad river valley surrounded by rolling hills, high plateaus, deep canyons, and rugged mountains. Elevation varies from 5,000 feet in the Gunnison River valley northwest of Delta to just over 11,000 feet on Cimarron Ridge southeast of Montrose.

The eastern portion of the planning area is comprised largely of broken hills and narrow valleys along the western flanks of the West Elk Mountains. The southern portion of the area borders the very high, rugged terrain of the San Juan Mountains. The western portion is characterized by the tablelands and narrow, steep-sided canyons of the Uncompahgre Plateau. The high mesas, foothills, and steep valleys along the southern base of Grand Mesa are in the northern portion of the planning area. The mid-section of the area, with the exception of the Gunnison Gorge, is less rugged, with gently-sloping hills and valleys, leveling off into the Uncompahgre and North Fork river floodplains.

Intensive soil surveys have been completed for the entire planning area by the Soil Conservation Service (SCS). These are the Paonia, Ridgway, Delta-Montrose and Mesa County soil surveys. Copies of the surveys are available for review at the UBRA office.

Water Resources

The western and northern portions of the Gunnison River drainage, a major component of the Upper Colorado River Basin, are within the planning area. Major subbasins include the Uncompahgre, North Fork of the Gunnison, and the lower Gunnison to the Delta/Mesa county line.

Peak flows on these river systems and their tributaries occur between April and the end of June as a result of high elevation snowmelt. Low flows originating primarily from ground water discharges (base flow) occur during fall and winter. The majority of the lower elevation drainages receive little precipitation (less than 15 inches annually) and consequently, have intermittent or ephemeral flows. High-intensity summer thunderstorms are common in the planning area, often producing high streamflows of short duration.

Table 1

**WATER YIELD ESTIMATES
FROM SELECTED VEGETATION ZONES IN THE PLANNING AREA**

VEGETATION ZONE	PUBLIC LAND ¹ (acres)	PERCENT OF PLANNING AREA	ESTIMATED ANNUAL PRECIPITA- TION (inches)	ESTIMATED ANNUAL WATER YIELD PER ACRE (inches)
Subalpine forests	6,429	1.3	20-40	5-25
Mountain shrub	53,230	11.0	16-24	1-6
Pinyon-juniper	185,521	38.4	12-18	3-4
Sagebrush	91,938	19.0	8-20	1-4
Salt desert shrub	136,380	28.2	10	1

Sources: Hibbert 1979; BLM1978; Lusby 1979.

Notes:

¹ Does not include all public land in the planning area.

Sediment yield varies considerably over the planning area, being primarily dependent upon geology, soil type, precipitation, land use, and physical characteristics of the watershed. The high mountain lands in the upper Uncompahgre River subbasin, such as the Cimarron Ridge area, have the lowest sediment yields. Dense vegetation and igneous rock formations result in average sediment yields of less than 0.5 tons per acre annually. At the other extreme are the lower elevation soils derived from the Mancos formation. These highly erodible soils, combined with sparse vegetation cover, can produce ten tons of sediment per acre annually under natural conditions.

Sediment yields are accelerated in many years by surface-disturbing land uses such as grazing, mining activity, and off-road vehicle use. Poorly located and unmaintained roads and water developments also produce sediment.

Vegetation

Nine broad vegetation types occur within the planning area. The mountain shrub, pinyon-juniper woodland, sagebrush, and desert shrub types comprise 97 percent of the area. Table 2 lists the acreage and percentage of public land in each vegetation type. Additional information about these different vegetation types is available for review at the UBRA office.

Table 2

VEGETATION TYPES ON PUBLIC LANDS
IN THE PLANNING AREA

VEGETATION TYPE	ACRES	PERCENT OF PUBLIC LAND
Coniferous forest	5,353	1.1
Aspen forest	1,076	.2
Mountain shrub	53,230	11.0
Pinyon-juniper woodland	185,521	38.4
Sagebrush	91,938	19.0
Grassland	1,230	.3
Desert shrub	136,380	28.3
Riparian	1,034	.2
Barren-annuals	7,315	1.5
TOTALS	483,077	100.0

Threatened and Endangered Species

Several plant species occurring within the planning area have been identified as threatened or endangered on federal or state lists. Others are considered to be candidate or sensitive species. These species are listed in Table 3. In addition, there are a number of sensitive, candidate, or federally-listed plants that are known to occur in the region but have not been located within the planning area.

Plant associations considered by the Colorado Natural Areas Program to be unique exist in the Escalante Canyon area. Table 4 lists these plant associations and the other plant species that constitute the special vegetation resources of the canyon.

Wildlife

Terrestrial Wildlife

The public lands within the planning area provide habitat for a wide variety of wildlife species which are managed by the Colorado Division of Wildlife. Since 1978, the BLM has increased monitoring of vegetation trend, browse condition, big game utilization, and, in cooperation with the DOW, big game

population numbers and trends. Table 6 briefly lists the findings of these studies by DOW game management unit (GMU).

The greatest demand for forage on the public lands is made by mule deer during the winter (December through April). The North Fork and the Uncompahgre river valleys have heavy winter concentrations of mule deer, and much of the area is considered crucial winter habitat. The demand for forage on public lands is expected to continue to increase due to fencing and residential development on adjacent private land.

In 1986, the DOW reintroduced Rocky Mountain bighorn sheep to the Gunnison Gorge area. It is anticipated the sheep population will reach 150 animals in eight to ten years.

Threatened and Endangered Wildlife

A total of twelve animal species listed as threatened, endangered, candidate, or sensitive are known to occur within the planning area. These species are listed in Table 5. The black-footed ferret (*Mustela nigripes*), a federal and state endangered species, may occur within the planning area but no sightings have been confirmed.

Aquatic Wildlife

Springs, seeps, reservoirs, streams, and rivers provide aquatic wildlife habitat. There are approximately 500 miles of significant aquatic habitat (creeks, rivers, and water-courses) within the planning area, 160 miles of which occur on public lands.

Livestock Grazing

A total of 457,465 acres, or 95 percent, of the public land within the planning area is grazed by domestic livestock. The area is divided into 159 grazing allotments with 132 livestock operators. A total of 38,951 Animal Unit Months (AUMs) of forage is available for domestic livestock use; approximately 23,667 AUMs are used in an average year.

Approximately half of the livestock grazing use is by cattle and half is by sheep. Nearly all of the sheep use is from ewe/lamb operations which use public land for winter grazing from November through mid-March. Cow/calf operations make up the majority of the cattle use although there are also several yearling operations.

Both cattle and sheep operations generally use the public land for spring grazing (May 1 to June 1) enroute to National Forest lands and again in the fall (October 1 through December) enroute to private wintering areas. A few cow/calf operations graze summer-long on public lands contiguous to private pastures.

Table 3

**ENDANGERED, THREATENED, CANDIDATE, OR SENSITIVE PLANT SPECIES
KNOWN TO OCCUR WITHIN THE PLANNING AREA**

COMMON NAME	SCIENTIFIC NAME	STATUS	HABITAT	ESTIMATED POPULATION	ESTIMATED ¹ ACRES OF HABITAT
Spineless hedgehog cactus	<i>Echinocereus triglochidiatus</i> var. <i>inermis</i>	Endangered	Gravelly soils on flats and low hills along major drainages	13,000 plus	app. 20,000
Clay-loving wild buckwheat	<i>Eriogonum pelinophilum</i>	Endangered	Whitish soil within Mancos shale	45,000-50,000	450-500
Uinta Basin hookless cactus	<i>Sclerocactus glaucus</i>	Threatened	Rocky soils	8,000 ²	app. 40,000
Montrose penstemon	<i>Penstemon retrorsus</i>	Candidate ²	Shallow slopes on Mancos shale	Unknown	Unknown
Delta Lomatium	<i>Lomatium concinnum</i>	Candidate ²	Low altitude Mancos shale areas in association with saltbrush	14,000 ²	160 ²
Grand Junction milkvetch	<i>Astragalus linifolius</i>	BLM Sensitive	Steep rocky slopes and bottoms in major canyons	Unknown	Unknown
Eastwood monkeyflower	<i>Mimulus eastwoodiae</i>	BLM Sensitive	Limestone seeps, hanging gardens	Unknown	Very restricted
Grand Mesa penstemon	<i>Penstemon Mensarum</i>	Candidate ²	Elevations above 8,000; oak/serviceberry reg. at lower elevation	Unknown	Unknown
Wetherill milkvetch	<i>Astragalus wetherillii</i>	Candidate ²	Sedimentary shale and sandstone soils; big sage communities	161 ⁴	24 ⁴
Barneby's columbine	<i>Aquilegia barnebyi</i>	BLM Sensitive	Base of vertical cliffs often in rock crevices	Unknown	Less than one

Notes:

¹ Estimated populations and acres of habitat are on public land only.

² Listing as endangered or threatened would possibly be appropriate with further study.

³ Status report by Jane Busch, 1/30/91.

⁴ Status report by Jane Busch, 1/30/91.

⁵ Gurnison Resource population for Recovery Plan.

Table 4

SPECIAL VEGETATION RESOURCES IN ESCALANTE CANYON

COMMON NAME	SCIENTIFIC NAME	STATUS/RANKING ¹
Uinta Basin hookless cactus	<i>Sclerocactus glaucus</i>	Threatened species
Grand Junction milkvetch	<i>Astragalus linifolius</i>	BLM Sensitive
Eastwood's monkeyflower	<i>Mimulus eastwoodiae</i>	Sensitive species
Alkali cordgrass	<i>Spartina gracilis</i>	Globally secure; rare in Colorado; 20 to 40 known occurrences
Hanging garden association Small-flowered columbine Eastwood's monkeyflower	<i>Aquilegia micrantha</i> <i>Mimulus eastwoodiae</i>	Globally secure; imperiled in Colorado; 6 to 20 known occurrences
Shadscale/Galleta grass association	<i>Atriplex confertifolia</i> <i>Hilaria jamesii</i>	Very restricted global range; threatened globally; imperiled in Colorado; 6 to 20 known occurrences
Utah juniper/Galleta grass association	<i>Juniperus osteosperma</i> <i>Hilaria jamesii</i>	Very restricted global range; threatened globally; imperiled in Colorado; 6 to 20 known occurrences
Needle-and-thread/Westslope grassland association	<i>Stipa comata</i>	Imperiled globally; imperiled in Colorado; 6 to 20 known occurrences

Notes:

¹ These rankings are provided by the Colorado Department of Natural Resources, Natural Areas Program. A Standardized ranking process which was developed for use in 41 heritage programs throughout the United States was used to determine status.

Table 5

**ENDANGERED, THREATENED, AND CANDIDATE ANIMAL SPECIES
KNOWN TO OCCUR WITHIN THE PLANNING AREA**

COMMON NAME	SCIENTIFIC NAME	STATUS	COMMENTS
Bald eagle	<u><i>Haliaeetus leucocephalus</i></u>	Federal and state endangered	Winter resident; hunting habitat
Peregrine falcon	<u><i>Falco peregrinus anatum</i></u>	Federal and state endangered	Yearlong resident; hunting habitat
Ferruginous hawk	<u><i>Buteo regalis</i></u>	Federal candidate	Possible breeder; winter migrant
Northern Goshawk	<u><i>Accipiter gentilis</i></u>	Candidate	Summer resident; migrant
Whooping crane	<u><i>Grus canadensis</i></u>	Federal and state endangered	Fall and spring migrant
Greater sandhill crane	<u><i>Grus americana</i></u>	State endangered	Fall and spring migrant
Long-billed curlew	<u><i>Numenius americanus</i></u>	Federal candidate	Migrant
Western yellow-billed cuckoo	<u><i>Coccyzus americanus occidentalis</i></u>	Federal candidate	Summer resident; migrant
White-faced ibis	<u><i>Plegadis chihi</i></u>	Federal candidate	Migrant
River otter	<u><i>Ptychocheilus lucius</i></u>	State endangered	Reintroduced in the Gunnison Gorge, 1977
Colorado squawfish	<u><i>Ptychocheilus lucius</i></u>	Federal and state endangered	Resident; Gunnison River
Mexican spotted owl	<u><i>Strix occidentalis lucida</i></u>	Proposed threatened	Potential resident
Roundtail chub	<u><i>Gila robusta</i></u>	Candidate	Resident in the Gunnison River
Flannelmouth Sucker	<u><i>Catostomus latipinnis</i></u>	Candidate	Resident in the Gunnison River
Razorback sucker	<u><i>Xyrauchen texanus</i></u>	State endangered and federal candidate	Resident; Gunnison River

Table 6

FINDINGS FROM HABITAT MONITORING

GAME
MANAGEMENT
UNIT

HABITAT CONDITION

GMU-411	Browse condition fair to poor; some localized over-utilization is occurring.
GMU-52	Browse condition fair to poor; browse may be stagnated.
GMU-521	Browse condition good; increasing pressure on public land due to development on private land.
GMU-53	A few acres of over-utilization exist; DOW population objectives may be too high.
GMU-62	Early spring conflict between deer and livestock use exists; distribution of deer within the unit is a problem.
GMU-63	Browse condition poor even with low utilization
GMU-64	Deer distribution within the unit is poor, resulting in localized overstocking; elk are at their upper limit.
GMU-65	Winter utilization a problem primarily due to distribution.

Forestry

Of the 191, 950 forested acres of public land within the planning area, approximately 3,685 acres of commercial forest lands and 45,886 acres of pinyon-juniper woodlands are suitable for sustained-yield management as identified by the Timber Production Capabilities Classification (TPCC) Inventory. Forest lands are classified as suitable if capable of yielding 20 cubic feet of wood products annually under intensive management practices and on a sustained yield basis.

Woodlands are classified as suitable if capable of stocking densities greater than 40 percent, crown closures have net annual growth rates often exceeding 20 cubic feet per acre, and slope gradients are less than 35 percent.

Woodlands

Most of the pinyon-juniper woodlands are on the Uncompahgre Plateau, and stands of Gambels oak occur on the south side of Grand Mesa. No allowable harvest calculations are available for these resources.

Average annual woodland product sales within the planning area include approximately 900 MBF of wood products, 1200 Christmas trees, and 350 transplants.

Recreation

The BLM manages two types of recreation situations on public lands. Most of the public lands are managed for dispersed recreation opportunities where recreationists have a freedom of recreational choice with a minimum of regulatory constraints. There are few BLM recreation facilities or supervisory efforts on these extensive recreation management areas. The other situation found in special recreation management areas may consist of designated areas with developed facilities such as interpretative signing, cabanas, and camping facilities.

Cultural Resources

A total of 2,237 sites have been recorded in the planning area. Of these sites, one petroglyph panel is listed on the National Register of Historic Places, 150 sites appear to be eligible for listing, 1,120 sites are considered potentially eligible for listing but require further analysis to determine their significance.

Wilderness

There are three WSAs in the planning area: The Camel Back WSA, the Adobe Badlands WSA, and the Gunnison Gorge WSA.

Camel Back WSA

The Camel Back WSA is located nine miles southwest of Delta on the eastern slopes of the Uncompahgre Plateau. There are 10,402 acres of public land and 160 acres of private inholdings within the WSA boundary. The WSA is nearly surrounded by public lands and adjoins the Uncompahgre National Forest along its southern border.

Adobe Badlands WSA

The Adobe Badlands WSA is located three miles northwest of Delta on the southern slopes of Grand Mesa. There are 10,425 acres of public land within the WSA boundary. The WSA adjoins the Grand Mesa National Forest along its northern border.

Gunnison Gorge WSA

The Gunnison Gorge WSA is located ten miles east of Delta. There are 21,038 acres of public land and no private inholdings within the WSA boundary. The southern border of the WSA is contiguous to a designated wilderness area within the NPS-administered Black Canyon of the Gunnison National Monument.

Fire Management

The BLM is responsible for protecting public resources from fire and for suppressing fires on public land. Between 1975 and 1984 there were 172 fires (an average of 17 fires per year) on public lands within the planning area.

Eighty-three percent of the fires on public lands were caused by lightning, mostly in the pinyon-juniper vegetation type. Lightning-caused fires generally occur in the summer from mid-June through mid-September. Most human-caused fires occur in late spring or late fall.

Only nine fires (5 percent of the total) were ten acres or larger in size. Of these larger fires, five were human-caused. The three largest fires (burning 136, 200, and 400 acres) were started when individuals burning brush and debris on their private lands allowed the fires to escape to public lands.

V. ENVIRONMENTAL IMPACTS

A. Proposed Action

If the proposed action would be adopted and implemented, an additional 362,000 acres of public land within the Uncompahgre Basin Planning Area would be considered for the use of prescribed fire. At present, only 121,000 acres have been identified where fire may be considered as a management tool.

Amending the RMP by implementing the proposed action would increase the amount of acreage suitable for burning and thereby increase the probability of using fire as a management tool. There are basically two "burn windows"; periods of the year when a prescribed burn would be within a defined prescription, spring (March through April) and fall (late September through October). With an increased acreage identified as suitable for using prescribed fire on, there would be a likelihood that there would be more fires and more acreage burned than if the plan were not amended. The impacts of those fires in general terms are as follows.

Air Quality

Fires release a wide range of chemicals and particles. Typical releases per ton of woody fuel consumed:

Particulates	5 to 100 pounds; a major air pollution concern (visibility)
Carbon dioxide	2,000 to 3,500 pounds (the oxygen comes from air)
Carbon monoxide	30 to 200 pounds; a pollutant concern
Hydrocarbons	10 to 40 pounds; over 50 compounds, may contribute to ozone
Sulfur dioxide	negligible; not a pollution concern
Ozone	is increased in upper plumes, but not well quantified
Nitrogen oxides	2 to 6 pounds; direct pollutant, contributes to ozone

Fires in forests are estimated to produce about 4% of the annual carbon monoxide production in the U.S.; values for other pollutants are: 3% of particulates; 2% of hydrocarbons; and 0.6% of nitrogen oxides. For brief periods of time, columns of smoke would be visible to surrounding communities. Burning permits obtained from the State of Colorado would be requested by BLM and would detail how the burns would not violate clean air standards. Because of downslope conditions created by mountains in the area, there is the potential for inversions to develop at night/early morning following the burn.

Soils

The effects of fires on soils involve consumption of woody debris and part of the forest floor, and results in high temperatures that may damage fine roots, loss of nitrogen and other nutrients, and increase in soil pH and nutrient availability. Effects that occur during the first year or so following fire would be soil hydrophobicity, accelerated erosion, gradually declining soil pH and nutrient availability. Effects that last a decade or longer would be potentially decreased nitrogen supply and effects of regeneration (or lack of) on nutrient cycles (especially nitrogen fixation, when it occurs).

Post-fire erosion of soil may increase for several reasons including increased energy of raindrops that are not slowed down by the vegetation canopy; decreased water holding capacity of the soil profile which means decreased infiltration rates and increased surface runoff; and hydrophobicity.

Each of these processes can contribute to erosion increases, because they all tend to increase the energy of the water. Effects depend on slope (flat areas erode less than slopes), fire characteristics (greater combustion of the protective forest floor leads to greater erosion), patchiness of the fire (erosion is limited by patch boundaries) and, of course, to rainfall events following the fire.

Biomass accumulation tends to acidify soils. Burning biomass reverses this process and raises soil pH. The change in pH would last for a year or two only and not harm site fertility.

Nitrogen loss during a set time period depends on temperature. Higher temperatures can oxidize more nitrogen than occurs at lower temperatures during the same period. Losses also occur as particulates are swept up in the smoky winds and blown off the site. Substantial losses of non-gas nutrients (such as calcium and potassium) occur this way, along with additional losses of nitrogen and sulfur.

Fires can also increase losses of nutrients through leaching from the soil profile; losses via this route tend to increase with fire severity. However, these losses are always negligible relative to gaseous and particulate losses.

Water

Fire would affect almost all components of the hydrologic cycle. By reducing forest canopy, losses due to evaporation of precipitation would be reduced, increasing the amount of water available for infiltration or runoff. The presence of litter and grass on the surface would also determine whether this additional water would be infiltration or runoff.

Absence of canopy also increases the force with which raindrops impact the soil surface. Burning would increase the erosion potential especially on slopes where the understory had not regrown since the burn.

The general impacts of fire on stream flows are increased springflows, increased annual flows, greater stormflows, and increased baseflows. Increased annual sediment yield in streams would occur but would be negligible in relation to water quality.

There would be a slight chance that nutrients washed off burned areas would concentrate in streams and impact aquatic systems. This would occur only if mass soil movement occurs and large temperature increases occur in the stream which received the eroded material so that the combination would result in an algal bloom.

Vegetation

Fire would tend to change the vegetation appearance of a landscape. In general, a fire would topkill (and in some cases, kill) woody species. It would tend to stimulate grassy species. The changed appearance then would consist of a more grassy appearing site with little vertical cover. In the long term, however, many woody species would be invigorated also by fire and tend to thicken (oakbrush is a good example) unless managed differently, post-fire.

The change to an initially grassy site, from a wooded site and then one later dominated by woody "fire" species dominated site, would have secondary impacts on hydrology, wildlife, and livestock grazing (see those sections of Impacts). These secondary impacts are much more apparent to people in terms of products derived from the site. Generally, more water would be produced, along with more red meat production (livestock and wildlife), on areas burned.

If exposed to fire, special status plants would be topkilled or, in an extreme situation, killed. The same would be true for special plant associations, fire could alter them significantly, but it may also serve as a beginning for the process to renew or expand the range.

Wildlife

Burning would have a significant impact on big game (deer and elk) habitat, especially the quality of winter ranges. Fire would remove old decadent browse stands, oakbrush, sagebrush, serviceberry and mountain mahogany and replace them with younger higher producing plants. These burns would become new foraging areas for biggame in winter. In the spring, these areas would also provide lush forage during critical calving and fawning periods. Burning would also increase the overall quantity of wildlife forage by increasing the number of acres of foraging areas in the winter time. This is especially important since winter range is continually being lost to agricultural and urban development.

Burning would also increase big game access to areas, since some areas are so heavily covered with brush that they physically exclude animals. Oakbrush is again a plant that exhibits this character.

Untreated sites would be left to provide cover for biggame. These would provide escape cover as well as thermal cover.

Burning would not negatively impact threatened or endangered species of wildlife.

Aquatic Wildlife

Burning would not directly impact aquatic systems. Impacts of a secondary nature would include sediment accumulation (slight probability) and temporary changes in water quality temporarily affecting those organisms in those systems.

Livestock Grazing

Impacts to livestock grazing of a prescribed burn would be similar to those experienced by big game. They are increased quality and quantity of forage and increased access to the forage resource.

Forestry

Fire would consume whatever plant species exist on a site, killing some, topkilling others. Indirectly, it would eliminate the sale of any forest products as they are consumed by the fire. No commercially significant products would be burned unless it was determined that no market existed for those products or that the loss of those products would not conflict with direction given in the UBRA RMP.

Recreation

Additional use by biggame to burned areas would create additional recreational opportunities for hunters on public land. These burned areas are very attractive to biggame because of the increased plane of nutrition found there and by hunters because of the increased line of site (lack of escape cover). Burning would have no negative impacts on the recreational resource.

Cultural

Fire would not impact most cultural sites such as petroglyphs, scattered ground sites, and rock shelters. Those sites not consisting of rock on or below soil surface which were burned would be destroyed or lost. No known threatened sites are known at this time.

Wilderness

Burning would have no direct impact on wilderness quality. All WSAs exhibit some signs of past burns which is considered a natural process. Allowing natural processes to function is one of the goals of Wilderness Management.

B. No Action

The impacts of the No Action alternative are the same as described in the Proposed Action for areas where fire is used as a management tool (see that section for details). Briefly they are:

- increased water yield
- temporary potential for increased soil erosion due to water
- increased forage production (quantity and quality)
- increased red meat production
- increased hunting opportunities
- loss of non-commercial forest products
- temporary poor air quality
- maintain or threaten unique plant associations
- threaten non-permanent cultural sites (those where vegetative fuels exists)
- temporary changes in soil nutrients

The difference between the Proposed Action and the No Action alternatives is the number of acres on which impacts could be expected. The Proposed Action would potentially impact three times as much land as the No Action alternative would. Site specific differences exist on each acre of public land in terms of the response that would be expected and associated impacts. Those differences would be documented in a site specific Environmental Assessment identifying significant impacts.

VI. CONSULTATION and COORDINATION

Public consultation was accomplished in a variety of ways. Over 200 news releases were sent out to addresses from the original RMP effort. Three public meetings were held in Hotchkiss, Delta, and Montrose. In addition, a press release was issued to the newspapers in the Planning Area.

Participation consisted of two (2) people attending the public meeting in Montrose and four written comments. All comments, written and verbal, were in favor of amending the land use plan as described in the proposed action. The State of Colorado, in its written, comments were not opposed to the proposed action.

List of those also Consulted

James Sazama	BLM
Robert Welch	BLM
Steve Ellis	BLM
Ron Huntley	BLM
Allan Belt	BLM
John Hawks	BLM
Joe Vinyard	BLM
Roger Lowry	DOW
Doug Homan	DOW